Claims

[c1] 1. A method for creating a plurality of devices on a semiconductor wafer, each of the plurality of devices having a plurality of device characteristics, the method comprising the steps of:
a layer of semiconductor film that at least partially covers a substrate of the semiconductor wafer, wherein the semiconductor film:
comprises a first composition at a first location on the semiconductor wafer, the first composition comprising at least two materials in a first predetermined proportion; and
a second composition at a second location on the semiconductor wafer, the second composition comprising at least two materials in a second predetermined proportion, wherein the semiconductor film at the first location will become part of at least one of the plurality of devices, wherein the semiconductor film at the second location will become part of at least one other device of the plurality of devices, and wherein the first and second compositions are different and are expected to create differences in at least one of the plurality of device characteristics between devices created at the first location

and devices created at the second location; and
performing a plurality of semiconductor processing steps on the semiconductor film to create the plurality of devices.

[c2] 2.The method of claim 1 further comprising the steps of:
measuring one of the plurality of device characteristics of a first device that is at the first location;
the one device characteristic of a second device that is at the second location; and
the optimum device characteristic between the one measured device characteristic of the first device and the one measured device characteristic of the second device, thereby determining the optimum composition of the semiconductor film.

[c3] 3.The method of claim 1:
wherein the step of performing a plurality of semiconductor processing steps further comprises the step of performing a plurality of semiconductor processing steps to create a plurality of devices at each of the first and second locations, some of the plurality of devices at the first location forming a first chip and some of the plurality of devices at the second location forming a second chip; and
the method further comprises the steps of:
measuring one of a plurality of device characteristics of

the first chip, thereby measuring the device characteristic of a first device that is at the first location;
one of a plurality of device characteristics of the second chip, thereby measuring the one device characteristic of a second device that is at the second location; and
the optimum device characteristic between the one measured device characteristic of the first chip and the one measured device characteristic of the second chip, thereby determining the optimum composition of the semiconductor film.

[c4] 4.The method of claim 3 wherein the one measured device characteristic is power consumption.

[c5] 5.The method of claim 1 wherein the first and second predetermined proportions are different, thereby making the compositions different.

[c6] 6.The method of claim 5 wherein the at least two materials deposited at the first location are different than the at least two materials deposited at the second location, thereby further making the compositions different.

[c7] 7.The method of claim 1 wherein the at least two materials deposited at the first location are different than the at least two materials deposited at the second location, thereby making the compositions different.

[c8] 8.The method of claim 1 wherein the semiconductor film is a gate dielectric material and wherein two of the plurality of device characteristics are performance and power consumption.

[c9] 9.The method of claim 8 wherein each of the at least two materials for the first and second compositions comprise silicon, nitrogen, and oxygen, wherein the gate dielectric comprises SiNxOy, and wherein the first predetermined proportion contains more nitrogen than does the second predetermined proportion, thereby creating difference in performance and power consumption between devices formed in the first location and devices formed in the second location.

[c10] 10.A method for compensating for radial processing effects on a semiconductor wafer, the method comprising the steps of:
providing a platen able to be spun about an axis;
a semiconductor wafer on a top surface of the platen, the semiconductor wafer having a top surface;
at least one nozzle and at least one vapor source per nozzle;
the at least one nozzle over a first location, at a first radius, on the semiconductor wafer;
a transport vapor through the at least one nozzle;

a vapor species from the vapor source with the transport vapor;

the vapor species and transport vapor onto the top surface of the semiconductor wafer;

a semiconductor film over the top surface of the semiconductor wafer by:

controlling the dwell time over the first location of the at least one nozzle, thereby depositing at the first location the semiconductor film having a first thickness, the semiconductor film at the first location comprising a first composition that comprises the vapor species;

the at least one nozzle over a second location, at a second radius, on the semiconductor wafer; and

controlling the dwell time over the second location of the at least one nozzle, thereby depositing at the second location the semiconductor film having a second thickness, wherein the semiconductor film at the second location comprises a second composition that comprises the vapor species, and wherein the first and second dwell times are chosen to reduce a known radial variation in the semiconductor film that is caused by performing a semiconductor processing step on the semiconductor film; and

performing the semiconductor processing step on the semiconductor film.